CHOICE

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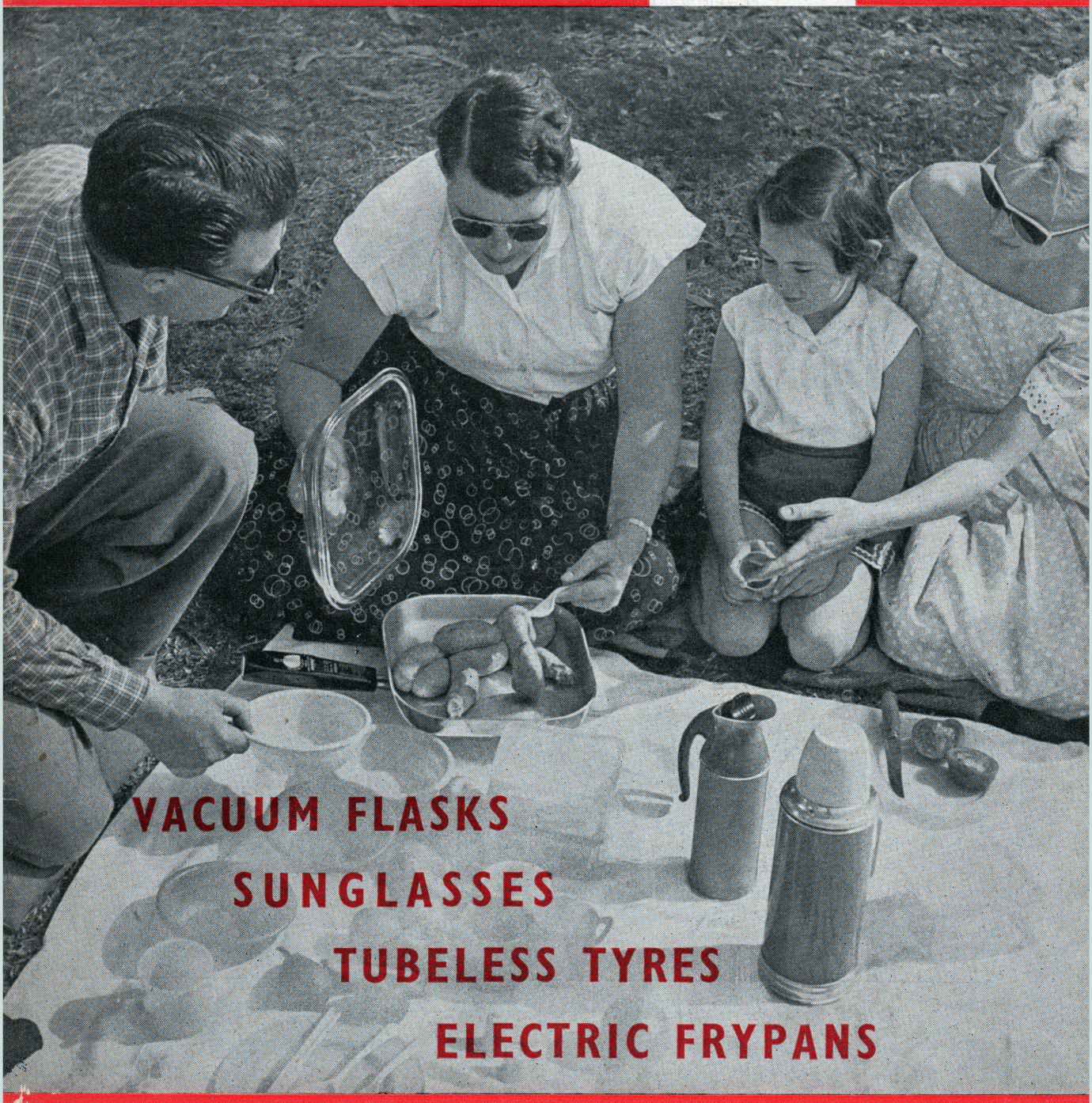

VACUUM FLASKS
SUNGLASSES
TUBELESS TYRES
ELECTRIC FRYPANS

The Journal of the Australasian Consumers' Association Ltd.

GENERAL NOTICES

Choice is the publication of the Australasian Consumers' Association Limited and is available only to members of the Association.
The Australasian Consumers' Association wishes to state that wherever there is reference in this magazine to tests or comments on any article or articles these references relate only to the article or articles examined by the Association and *not* to any other article of the same or similar description.
The prices given for the goods described in *Choice* are the prices paid by ACA for the goods at the time of purchase. The prices of goods of such description may vary from place to place in Australia and from time to time.

MEMBERSHIP

There are two kinds of membership:

1. ORDINARY MEMBERS, who are entitled to receive copies of the publications of the Association and also to attend and vote at General Meetings.

Such members must not be engaged in the manufacture or sale of goods or services of the kind which the Association will examine, and hence persons who wish to become Ordinary Members are required to submit an application for approval of the Council. The number of Ordinary Members is limited, and it is considered that future applicants should be taking active interest in ACA in the various States.

2. ASSOCIATE MEMBERS (**the usual form of membership**)

Anyone may become an Associate Member on payment of an Annual Subscription of £1, which entitles the member to the magazine and other publications of the Association but not the right to attend or vote at General Meetings.

Australasian Consumers' Association Ltd.

(*Incorporated in New South Wales*)

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No. 2 CHOICE August, 1960

CONTENTS

EDITORIAL: ACA GROWS INTO A LUSTY INFANT	27
NOTES AND NEWS	28
FORMATION OF THE INTERNATIONAL OFFICE OF CONSUMER UNIONS	30
VACUUM FLASKS FOR HOT OR COLD LIQUID	31
SUNGLASSES	37
QUEEN BEE JELLY	40
ELECTRIC FRYING PANS	44
HOW HOT IS A HOT CUP OF TEA?	48
CAN TUBELESS TYRES BE RECAPPED SUCCESSFULLY ?	49
LETTERS TO THE EDITORS	51

ACA GROWS INTO A LUSTY INFANT

EDITORIAL

We are sorry that four months have passed since you received *Choice* No. 1, but a great deal has been achieved in this time. The Council has been very hard at work.

If you recall, we carefully avoided saying anything about the frequency of publication of *Choice* in our first issue. We thought it possible, but extremely unlikely, that the £150 odd we put in would never permit a second issue to come out. ACA is now on the road to success. Our first printing of *Choice* No. 1 is exhausted—5,000 copies—and a second printing is now complete—15,000 this time.

We are now prepared to say, quite definitely, that there will be four issues of *Choice* in 1960, and we hope eventually to produce the magazine bi-monthly.

Success depends entirely, as we have said before, on our membership and we must aim at making this as great as possible. We have started branches in other States and you will see a note on this in this issue. Please do realise that this is your Association—yours and mine—because we are all consumers.

Well, why the delay? During this four month period ACA has made arrangements for offices and a first testing laboratory in Sydney; it still has appointed no full-time staff and once again the production of *Choice* has been a voluntary effort. Editorial work, testing, photography—all have been freely given by enthusiasts. In addition some time ago we decided to test automatic frypans and we always intended to give our readers a really up-to-date service. We knew there were three of these and we thought there would be a fourth—Hotpoint—and we briefed our shoppers to buy one but alas, they found these were not yet available and we delayed until we could wait no longer, and off to press we had to go—after several weeks of patience. We do assure our readers that we shall buy one of these pans just as soon as we can and submit it to the same tests as the others. We shall put this on a separate sheet so that you can keep it in this issue with the other three.

Dr. Henry Epstein has come back from the international conference of consumer organisations in the Hague and ACA has become a founder member of the International Office. He has written a brief note on this trip for *Choice*.

In this issue we reproduce only one article from overseas—that dealing with Royal Jelly from CA in Gt. Britian—and we have great ideas for the future. We have started the work of setting up a cigarette smoking machine on the lines of that used by the Consumers Union of U.S.A. and in forthcoming issues we shall deal with cigarettes. Following on the tests on frypans and vacuum flasks in this issue, we propose to look at steam-and-dry irons in our next issue. We have also asked you to fill in a slip to guide us in our testing programme. Please get just as many new members as you can and pop this questionnaire in the envelope too.

Remember always that ACA is your Association, your testing laboratory, your adviser. There is no connection with any manufacturer whatsoever. The success of ACA depends entirely on your support and that of everyone in your street, so we ask you to be our ambassador and enrol all your friends as members.

NOTES AND NEWS

Professor Thorp addresses the National Council of Women in Sydney.

Professor Thorp and Mrs. Sheahan were guests at a meeting of the National Council of Women in Sydney on the evening of June 30.

Mrs. Metcalf took the Chair and invited both of ACA's representatives to talk about our Association. The gathering—some fifty strong—learned about ACA, and our Secretary had a busy time enrolling them all as members. We thank them for this opportunity and for their enthusiasm. They appreciate, as we do, the need for taking ACA into every home.

A Binder for Choice

In our next issue we shall give details of an attractive binder which has been specially designed to hold ten copies of *Choice*. The binder is being produced in plastic and it will be sold to members for very little more than cost plus postage. If you are interested please tick your reply form so that we have some idea how many we should have made.

ACA BRANCHES FOR VICTORIA AND SOUTH AUSTRALIA

We are pleased to report that ACA Branches have now been launched in Victoria and South Australia. With the Branch early established in Western Australia by the Hon. Mrs. R. F. Hutchison, M.L.C., Western Australia, the Association now has three. Plans to organise ACA in Queensland and Tasmania are being made by the Council's Committee on Branches, which is under the chairmanship of Dr. R. G. Wylie.

The inaugural meetings of the Victorian and South Australian Branches were timed to fit in with the movements of Mrs. Hutchison, the founder of ACA, who attended the meetings after having visited Sydney. In Melbourne the meeting was convened by Professor F. P. Donovan, Professor of Commercial Law in the University of Melbourne. Nine members were present, including Mrs. G. Thake, who had already been active in Melbourne on the Association's behalf. The Secretary of the Victorian Branch is Dr. K. M. Benn. The postal address of the Branch is Box No. 1730P, G.P.O., Melbourne.

In Adelaide, a meeting convened by Professor R. L. Mathews, Professor of Commerce in the University of Adelaide, laid the foundations for the South Australian Branch. Correspondence should be addressed to Box 1040J, G.P.O., Adelaide. The Western Australian Branch is under the chairmanship of Dr. H. P. Schapper and the secretary is Mr. E. Johnson. The postal address of the Branch is Box T1641, G.P.O., Perth.

Those who have met to pilot the affairs of the Association in these states are people of considerable accomplishment and the Council is very appreciative of their keen support. In the near future the Branch groups will be installed as Standing Committees of the Council and arrangements will be made for their representation on the Council.

ACA intends that the Branches should have great freedom in pursuing Association affairs in their respective states.

The Hon. Mrs. Ruby Hutchison visits Sydney, Melbourne and Adelaide.

During June our Founder, The Hon. Mrs. R. F. Hutchison, came over from Perth to help in the promotion of ACA. She was entertained by the ladies of the Feminist Club and addressed them at a lunch-time meeting. She was also Guest-of-Honour at an evening gathering presided over by Mrs. Macdonald, President of the Women's Independent Party, and gave a brief talk on ACA.

While in Sydney, Mrs. Hutchison stayed with her daughter, Mrs. I. M. Sheahan, and attended a meeting of ACA Council at which she gave great assistance with suggestions for the formation of State Branch Committees. She also attended a special meeting of the National Council of Women, and on the return journey to Perth attended the first meetings of the Victorian and South Australian Branch Committees.

ACA Council very much appreciated Mrs. Hutchison's trip, and hope to see her in Sydney more often.

C.U. Mid-Year Buyer Guide

Owing to the great demand for the 1959 Mid-Year Buying Guide supplies were soon exhausted; but Consumers Union have sent a further consignment and there will now be no delay in sending these out to members. For details see *Choice*—back cover.

ACA's New Offices

Up till now the Registered Offices of ACA have been at the Hon. Secretary's home at Coogee. With the rapid growth of membership we have outgrown this stage and will shortly be moving into city premises in Sydney. Our G.P.O. Box number will be continued for the present and members will be informed of any changes in our next issue, by which time we should be installed in our new home.

ACA at the Feminist Club

Professor Thorp was invited to talk on ACA at the luncheon of the Feminist Club on May 8th. The ladies showed great interest and were keen to join and tell their friends about ACA.

The Hon. Secretary of the Club, Mrs. W. J. Sorley, acted as hostess and welcomed Mrs. Sheahan and the Speaker, and ACA thanks her for this opportunity to spread the news of our work.

ACA at the Housewives' Association

Professor Thorp was lunch-time speaker at the meeting of the Housewives' Association on August 5th in Sydney at the Adyar Hall. Mrs. Robinson took the chair, and after Professor Thorp had described the work of ACA and its aims a lively discussion followed and the members present showed their enthusiasm by offering to further ACA's interests among their friends.

FORMATION OF THE INTERNATIONAL OFFICE OF CONSUMER UNIONS

At the International Conference of Consumer Associations held in Holland last April, the International Office of Consumer Unions, IOCU for short, was formed. The founders of this office are the following wholly independent Consumers' Unions:

Consumers Union of U.S. Incorporated (CU),

Consumers Association Ltd. (CA).

Nederlandse Consumenten Bond (NBC).

Union Belge des Consumateurs (UBC).

Australasian Consumers' Association (ACA).

Legally, the office is in the form of a "Stichting" which is the most suitable legal form to incorporate such an international organisation in Holland, with its legal seat in The Hague.

The delegates to the International Conference signing the documents forming IOCU

Left to right: *Dr. H. Epstein (Australia), Mrs. Mary Adams (Gt. Britain), Mr. L. Darms (Belgium), Mrs. Schadee-Hartree (Holland), The Notary, Dr. Colston Warne (USA).*

There were seventeen Consumers' Associations participating in the Conference from all over the world. Our Association was represented and we are proud to be one of the Founder Nations of the International Office.

The objects of the IOCU are:

(*a*) To act as a Clearing House for test methods, plans and publications.

(*b*) To build up an index of independent testing laboratories in various countries.

(*c*) To promote international co-operation in the field of comparative product testing.

(*d*) To organise international meetings to promote comparative testing.

(*e*) To regulate the use of ratings and reprints on published material subject to such regulations as may be promulgated by the member organisations concerned.

(*f*) To give grants to organisations dealing with consumers' interests.

(*g*) To publish information on subjects connected with consumers' interests.

(*h*) And in general to do everything which may further the objects of the Foundation.

The Clearing House of the International Office consists at present of sixteen associations from every part of the Globe. These Associations represent over a million members and hundreds of millions of pounds of purchasing potential.

The founding of the IOCU marks another milestone in the rapidly developing international Consumers' Movement.

The IOCU has already issued two bulletins with very valuable information. It must be kept in mind that all this has been achieved by wholly independent Consumers' Organisations who rely entirely on their membership. The maintenance and development of vigorous testing has to be done by a body wholly independent from industrial, commercial, and advertising interests and free from government influence. In other words, we have to have a large enough membership to support regular and effective testing.

VACUUM FLASKS FOR HOT OR COLD LIQUID

It is surprising how many people have said that they "could do with another vacuum flask" when told about ACA's work for this article. When they set about purchasing one they will certainly make a "choice", for there are twenty-one brands available that we know of and many of these are obtainable in more than one type and in a range of sizes. In this article ACA reports on vacuum flasks of the narrow-necked type, which are intended for keeping liquids hot or cold. These are suitable for tea and other hot drinks, for soups, and in most cases for cold drinks.

To discover what vacuum flasks are generally available we made a survey of brands, sizes and prices in Perth, Melbourne, Parramatta and Sydney. Guided by this survey we then purchased flasks in each of these places and subjected them to various tests at a central point in Sydney.

What Brands are Available?

The brands of vacuum flasks encountered by ACA's shoppers fall into two groups—those in which the glass vessel is made in Hong Kong (15 brands) and those in which it is made in England (5 brands) or, as in one case, Scotland. In one instance the glass vessel is marked with a Hong Kong brand while the outside of the flask is marked "Made in Australia"—the brand AVACO. A small number of Hong Kong manufacturers has obviously produced the glass vessels for all the brands in the first group. The United Kingdom brands, on the other hand, are made by apparently distinct companies.

What Sizes are Available?

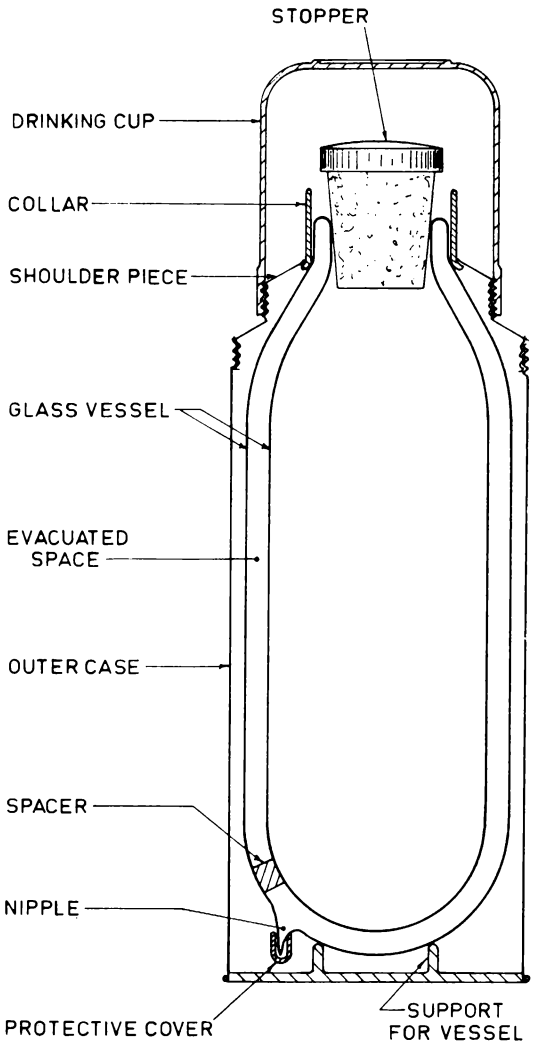
In most stores the flasks are stated to be in pint sizes, *i.e.*, ½, 1, 1½ and 2-pt. sizes, but in some stores are described as "2-cup", "4-cup" etc. However, in reality vacuum flasks, with few exceptions, are in the following sizes:

8	fluid	ounces	(0.4 pt.)
16	„	„	(0.8 „)
26	„	„	(1.3 „)
36	„	„	(1.8 „)

20 fluid ounces equalling one pint. The 26-oz. size is not as common as the others. Many English flasks have their size marked on them or on their cardboard cartons. The 16- and 36-oz. sizes are those that the stores usually describe inaccurately as 1- and 2-pt. sizes. In most cases "2-cup" and "4-cup" were found to refer to 16- and 36-oz. flasks, but in one store these terms described 8- and 16-oz. flasks, which is misleading.

The Parts of a Vacuum Flask

Our diagram names the parts of a typical vacuum flask so that you will know what we mean when we refer to them below. Different brands, of course, differ somewhat in detail.



The space between the inner and outer walls of the glass vessel is evacuated of air—hence the term "vacuum". In fact, less than a millionth part of the air can be allowed to remain if the flask is to be a good one. To determine whether the vacuum is good enough in a finished flask the ability of the flask to retain heat (or cold) must be tested. The purpose of silvering the walls of the glass vessel, on the vacuum side, is to reduce a loss of heat which occurs by a radiative process. The surface in contact with the liquid in the flask is plain glass. The evacuation process leaves a nipple on the glass vessel; this nipple is rather fragile and, since it must not be damaged, is sometimes fitted with a protective cover. Three spacers, often provided between the glass walls to strengthen the vessel, may be more or less visible through the glass.

The glass vessel sits on a soft support and its neck is held by the shoulder piece, which is usually made of aluminium. It is desirable that no liquid should be able to get into the outer case by leaking between the glass and this shoulder during filling or pouring; most outer cases are made of tin-plate, which soon rusts if liquid gets in. Consequently, a seal is provided between the glass and the shoulder; sometimes this is simply a rubber ring, but often it is of plastic and is extended to form a collar or lip which makes pouring easier. Some flasks have breathing holes in the bottom of the case to allow the evaporation of any liquid drops which get inside. These holes ought to be provided on all flasks with tin-plate cases, because few seals are perfect and, in any event, if liquid is spilt, small amounts can get in at the screwed joint between the case and the shoulder. Incidentally, this joint in THERMOS-brand flasks, unlike all others tested, for no apparent reason has a left-hand thread, so that you must turn it oppositely to the usual way to unscrew it.

In some flasks the vessel is supported on a steel spring with a rubber top. This has two disadvantages; the spring is even more prone to rust than the case, should liquid reach it, but, more important, if the stopper is pressed into the flask very firmly the whole glass vessel may move downwards inside the case, which is annoying and breaks the seal between the glass and the shoulder, at least temporarily. In many of the English flasks tested the stopper is of plastic and does not close the glass vessel directly but closes across the collar. It is then very important for no serious leak to occur between the glass and the collar, or the contents of the flask would spill into the outer case.

ACA's Tests

The brands selected for testing were those most generally available, but none which appeared to be well made were excluded. All the flasks tested had outer cases of tin-plate; we do not, however, suggest that a plastic outer case is necessarily a bad feature. In most instances two flasks of a brand and size were tested, at least in the sense that a replacement glass vessel, or "refill", was bought and the heat test carried out using the flask both as purchased and with the refill substituted for the original vessel. Similar flasks of the same brand were bought in different places but some refills were bought together with the corresponding complete flasks. Two brands of flask tested were made by the same Hong Kong manufacturer—the PIPING HOT and LUCKY STRIKE.

The Tests

Four groups of tests were applied. These determined:

1. The actual size, the merit of the design and the general quality of construction.
2. The ability of the seals to keep liquid out of the case.
3. The ability of the flask to retain heat and, in some cases, also cold.
4. The ability of the flask, when full of liquid, to survive tipping-over on a firm surface.

In test 1, the amount of water required to fill each flask and each refill to the bottom of the neck was determined and each flask was dismantled and examined. Test 2 consisted in examining the outer cases for water penetration after the flasks had been used in a normal manner for the heat test. Any showing no penetration at that stage were further tested by directing a stream of water onto their seals and re-examining them.

The main test was number 3. A total of 33 flasks (including those containing refills) were tested for their ability to retain heat or, in some cases, cold, while filled with water. Each test continued for 48 hours. The flasks were tested in an upright position and were stirred gently by a continuous rocking action, a light paddle having been suspended in the water in each. During a test the temperatures of 16 flasks were automatically recorded at regular intervals by electrical instruments. The method used to measure the temperature allowed the stoppers and drinking cups to be in their normal positions without the need to damage the cups.

In test 4, each flask, filled with water and with its stopper and cup(s) fitted, was slowly tilted by applying a finger near the top until it fell over under its own weight. This was done on a surface of heavy-grade linoleum.

The Results

You will find the results of the tests set out in the table. In the first column the flasks are listed by brand name and manufacturer's type number, and any necessary description is given. The next column gives the price paid. The third gives the nominal size in fluid ounces where stated by the manufacturer, and the fourth the amount of liquid actually held, to the nearest fluid ounce. The next states the number of drinking cups provided.

Column six gives the type of stopper, seven the type of collar and eight the type of support provided for the bottom of the vessel. Any comment on the nipple is made in column nine.

The figure given next, in heavy type, is a measure of the ability of the flask to retain heat. It is roughly the number of hours that it would take for tea to cool to the point where it is just too hot for almost anybody to drink even in sips, the flask being filled with hot tea in the way suggested below*.

The results of the tests of ability to retain cold are not included in the table, but are mentioned later on. The last two columns give the results of the water-penetration and tipping-over tests.

Comments

You will notice that the prices for the commonest size of flask, 16 oz., vary by about two to one. However, the quality varies a good deal too. An odd feature is the way in which the prices paid for ordinary-type VACCO flasks and their refills are related : if you buy a refill instead of a complete new flask you save 5/- for the 8-oz. size, 2/- for the 16-oz. size and 9/11 for the 36-oz. size. The purchase of a refill is certainly not a proposition if it represents a saving of only 2/-. Incidentally, vacuum flask prices were found to be essentially the same in Perth, Melbourne and Sydney (including Parramatta).

The actual capacities of the flasks are close to their nominal values, with a tendency to be a little on the low side. The table shows you the sizes of some of the cheaper brands; these sizes are no better known to the stores than to their customers.

A feature which particularly deserves some discussion is the stopper. The cheapest flasks have corks, either bare or covered with muslin. When used in a vacuum flask a cork becomes smaller in diameter and eventually loose. This is recognized by some manufacturers (or chain-store proprietors), since refills for some flasks were accompanied by new corks. Another disadvantage of corks is the possibility of their affecting the flavour of the contents of the flask, especially if different liquids are carried on different occasions. The provision of a paper cover for the cork, as in one of the THERMOS flasks tested, may help in this regard, but obviously the paper will not last long. The use of a muslin cover on a cork seems to be entirely lacking in point. It is bound to lead to a slow seepage of liquid from any flask not maintained in a vertical position. The plastic stoppers are

*Some readers may like to know that the figure is the time taken for the liquid in the flask to cool from 98°C to 72°C, the outside temperature being 20°C.

VACUUM FLASKS

CHARACTERISTICS AND TEST RESULT

Brand and Type	*Price*	*Size in Fl. Oz.*		*Cups*	*Stopper*	*Collar*	*Support for Vessel*	*Nipple*	*Heat Test*	*Seal Around Neck*	*Tip-over Test*
		Nominal	*Actual*								
THERMOS No. 15½ (English)	12/6	8	8	1	Plastic snap-on	Projecting collar	Plastic, good		9·2	Good	Pass
„ with Refill	Refill 9/3	8	7	—	—	—	—	—	8·9	—	—
VACCO VMS/H (English)	12/6	8	9	1	Plastic screw	Projecting collar	Rubber, good		10·8	Good	Pass
„ with Refill	Refill 7/–	8	8	—	—	—	—	—	9·1	—	—
PIPING HOT	7/11	—	15	1	Cork, muslin covered	Lip	Spring, poor	Rubber cover	15·4	Poor	Pass
PIPING HOT	7/11	—	16	1	Cork, muslin covered	Lip	Spring, poor	Rubber cover	14·6	Good	Pass
LUCKY STRIKE	7/11	—	14	1	Cork	Lip	Spring, poor		15·2	Poor	Pass
„ with Refill	Refill 4/11	—	14	—	—	—	—	—	12·3	—	—
AVACO	9/6	—	16	1	Cork	Lip	Spring, poor	Rubber cover	10·1	Good	Pass
ISOVAC (English)	14/3	—	16	1	Plastic plug (to glass)	Projecting collar	Plastic		11·3	Good	Pass
ISOVAC Gold Seal Model (English)	15/6	—	15	1	Plastic Screw (to collar)	Projecting collar	§	§	9·9	§	Pass
THERMOS No. 14 (English)	15/9	16	15	1	Cork and paper cover	Projecting collar	Plastic, good		15·7	Good	Pass
„ with Refill	Refill 10/–	16	15	—	—	—	—	—	12·3	—	—
FREEZHEAT Caloseal (English)	15/6	16	15	1	Novel expanding plug	Lip	Cork, a bad shape	Very delicate	3·2	Good	Pass
„ Caloseal‡	—	16	—	—	—	—	—	—	11·1	—	—
FREEZHEAT Jug-type (English)	17/6	16	14	None	Cork	Jug-form	Cork, a bad shape	Very delicate	14·0	Poor	Pass
VACCO VMS (English)	15/6	16	16	1	Plastic screw	Projecting collar	Rubber, good		13·7	Good	Pass
„ with Refill	Refill 13/6	16	15	—	—	—	—	—	14·3	—	—
VACCO T.F.2 "Tea" Flask† (English)	19/11	16	15	1	Plastic screw	Projecting collar	Rubber, good		16·0	Good	Pass
EMBASSY	12/6	—	26	1	Cork	Lip	Spring, poor	Rubber cover	17·5	Good	Pass
„ with Refill	Refill 6/6	—	26	—	—	—	—	Broken	2·2	—	—
SHIELD	12/–	—	30	1	Cork, muslin covered	Projecting collar	Rubber, good	Rubber cover	17·8	Good	Pass
THERMOS No. 15Q (English)	28/3	36	35	2	Plastic snap-on	Projecting collar	Plastic, good		17·7	Good	Glass vessel collapsed
with Refill	Refill 18/3	36	35	—	—	—	—	—	18·8	Good	Glass vessel collapsed
VACCO VMS/Q* (English)	27/11	36	36	2	Plastic screw	Projecting collar	Rubber, good		20·7	Poor	Pass
„ with Refill	Refill 18/–	36	36	—	—	—	—	—	21·5	—	—
VACCO T.F.Q. "Tea" Flask†* (English)	32/6	36	36	2	Plastic screw	Projecting collar	Rubber, good		19·3	Good	Pass

‡Containing the glass vessel from the FREEZHEAT Jug-type.

†Incorporating a bottle for milk in a compartment at the bottom.

§Shoulder could not be unscrewed.

*Handle on side of case.

preferable. Except for the plastic plug of one of the ISOVAC flasks, these seal to a plastic collar and not directly to the glass. The snap-on type, employed by THERMOS, unfortunately requires the flask to be taken very firmly in both hands for its removal, and there is a very real danger of the flask being dropped. Further, it relies on the dimensions of the plastic not changing much with time. Possibly it could eventually become loose. The plastic screw used by VACCO is easy to remove and to fit, and probably will continue to provide a good seal for a long time. There is some evidence that, despite its disadvantages, a cork stopper is a better barrier to loss of heat than a plastic stopper is. The plastic stoppers could easily be improved in this respect.

There is not much correspondence between the leakage of water into the case and the type of construction used. The THERMOS flasks were all good in this regard but one of the VACCO flasks allowed some leakage. However, none of the flasks was outstandingly bad, and it is clear that vacuum flask manufacturers have at least learnt that some sort of seal must be provided between the glass vessel and the shoulder.

Some interesting conclusions can be drawn from the results of the heat test, given in heavy type. Firstly, two figures stand out as being much poorer than all the others. The value 2.2 hours for the EMBASSY flask with refill led us to make an examination of the glass vessel. It was found that the tip of the nipple was broken. The figure given thus shows the performance of a "vacuum" flask without a vacuum. The components of the flasks were all handled carefully during testing, and ACA believes that the refill was already defective when purchased. The damaged nipple could easily have been detected at the time of purchase, if an examination had been made, because a finger drawn over the end of the nipple immediately reveals the sharpness of the broken tip.

The second low figure, 3.2 hours for one of the FREEZHEAT flasks, is also undoubtedly attributable to a poor vacuum. However, in this case no damage to the glass vessel could be detected. It would appear that the poor vacuum occurred in manufacture. To use a technical term, the vacuum achieved was too "soft". There is no way in which our shopper could have detected this.

Apart from these two failures, the main factor in the ability to retain heat is seen to be the size of the flask. The times given for the 8-oz. flasks range from 8.9 to 10.8 hrs., those for the better 16-oz. flasks from about 12 to 16.0 hrs., and those for the 36-oz. sizes from 17.7 to 21.5 hrs. There are good reasons why this is to be expected. As regards brands, the VACCO flasks retained heat best, the THERMOS flasks being almost as good in this respect. Apart from the instance of a broken nipple, the PIPING HOT and SHIELD brands, sold by Woolworths, and the LUCKY STRIKE and EMBASSY brands, sold by Coles, were comparable with the THERMOS flasks. The ISOVAC flasks must be judged inferior to these as regards heat retention, and, on the evidence, the same assessment must be made of the AVACO and FREEZHEAT brands.

In the tipping-over test the smaller vacuum flasks have a natural advantage over the larger flasks, and so it is not surprising that the only flask to fail in this test was of the largest size—the 36-oz. THERMOS. When it was found that the original vessel of this flask was the only one broken, the test was repeated with the refill. As the table shows, this also broke. There were no apparent manufacturing defects in the case or its fittings which could have influenced this result.

Some other results, which we have not given in the table, may be mentioned. Firstly, it was found that vacuum flasks in an erect position are much better in retaining cold than heat, and that if a flask is better than another of the same size in retaining heat then it is much better than the other in retaining cold. The explanation of these facts is connected with the question of *how* the heat escapes from the flask—a question that we cannot go into here. The point is that if you want a flask mainly for *cold* liquids the differences between the times given for any particular size in column ten of the table should be taken more seriously than if you want a flask mainly for *hot* liquids.

The Best Buy

In deciding the best buy ACA had to weigh the cost against the general construction, for there is not much to choose between the cheapest and the most expensive flasks as regards ability to retain heat. Furthermore, refills can be obtained for flasks at both ends of the price range.

The general construction determines whether the flask is convenient to use and how long it will last before giving trouble. We therefore give separate answers for two different sorts of people. If you are insensitive to minor inconveniences and are not inclined to think of a vacuum flask as a long-term investment, then the PIPING HOT, LUCKY STRIKE, SHIELD and EMBASSY brands, all containing glass vessels made in Hong Kong, are your best buys. However, ACA members are likely to be conscious of inconvenient features and to take a long-term view. For them the best buy is the :

VACCO

Choice of Size and Type

Having decided on a brand you have still to choose a size and possibly a type. Types available include plain flasks, "tea" flasks incorporating a bottle for milk in a special compartment (VACCO), and flasks in the form of jugs. Jug-type flasks are mainly for use in the home, and may be valuable for keeping a hot drink beside a sick-bed or for ensuring that your early-morning cup of tea is within reach when you wake up. Special flasks, like the VACCO tea flasks, are a matter of personal taste.

If you require a lot of hot liquid, the 36-oz. size may be your only choice. On the other hand, if the flask is to go into a child's schoolbag, the 8-oz. size is appropriate. (Remember, incidentally, that the smallest size is inherently the most robust.) Most requirements lie in between. It seems to ACA that there is a lot to be said for buying a liberal size. As the table shows, a large flask, provided it is filled, keeps the liquid hot longer. Also, it spares you the anxiety of wondering whether there is enough, and the surplus can be used to rinse cold drinking vessles so that they will not cool the drink very much. However, it would be a mistake to buy a large flask unless you are prepared to fill it almost completely on most occasions when you use it.

Using your Flask

The most important point in using a vacuum flask is to fill it practically completely, preferably to the bottom of the neck. The drop in temperature in a flask which is only half full occurs roughly twice as fast as in a full flask. If you want to keep a liquid hot as long as possible, you should fill your flask in such a way that the contents are boiling hot at the start.

Vacuum flasks are used mostly for hot tea, for which we suggest the following filling procedure :

1. Choose a *metal* teapot; an aluminium, chromium-plated or silver-plated teapot is suitable.
2. Make the tea in this in the usual way, filling the teapot sufficiently to allow you to fill the vacuum flask, but leaving a small amount of boiling water in the kettle.
3. As soon as the boiling water has been put in, stand the teapot on the smallest burner of your stove and bring the tea back to the boil. (Watch the handle!) This will take approximately 30 seconds.
4. While the tea is coming to the boil, rinse out the vacuum flask twice with boiling water from the kettle.
5. As soon as the tea boils, remove it from the stove and pour it into the flask.

Perhaps we should add that even the most fastidious tea drinker could not tell that the tea had been boiled in this way.

When you have filled a flask with a very hot liquid, first sit the stopper loosely in position for a minute. Then tighten it without removing it from the flask. This precauuion will prevent a build up of pressure which otherwise could force the stopper out or cause a minor accident when it is later removed.

Are your neighbours members of ACA?

BE AN AMBASSADOR FOR YOUR ASSOCIATION

In Australia's sunny clime a pair of sunglasses is a possession of almost every man, woman, and certainly all teenagers. Millions of pairs are sold every year in chain stores, pharmacies, hardware shops, on the beach, or in the bush. How good are they? Do you know what you are buying? Are they a snare and delusion—just a gimmick? Not one of ACA's shoppers could answer these questions so the answer had to be found in ACA's laboratory tests.

When to wear Sunglasses

In the bright Australian sun the glare from the beach or off a shining road can be very trying indeed, especially for fair-skinned people who have less natural pigment in their eyes and are usually inclined to suffer more in the sun. A good pair of sunglasses greatly increases the pleasure and relaxation of sport or a long car drive. For some too they have a cosmetic value lending exotic glamour and mystery to the young-in-heart and hiding the deceptive wrinkles which mark the ageing process in those not so young. There is little case for wearing sunglasses indoors, but for writing or reading out-of-doors, they are almost invariably essential.

Ultra-Violet and Infra-red

White light, sunlight, is made up of radiations of various wavelengths or colours, some of which are visible as light and others, at the two ends of this range, are invisible and comprise the short wavelength radiations or ultra-violet and the longer wavelength radiations, infra-red, which give rise to heat.

The wavelengths of these radiations are all very short and are measured in millimicrons (one millimicron, or mμ is a millionth of a millimetre).

If you look at Figure 1 you will see that we have made a diagram which shows the wavelengths along the horizontal direction and those from 300-400 mμ we call ultra-violet, from 400-800 mμ comprise the visible spectrum ranging from violet through blue, green, yellow, orange and red, and above 800 mμ we call infra-red. All these colours are mixed together to make white light.

The eyes are fatigued by too much ultra violet or infra red and also by too great an intensity of visual light, so our ideal glasses should cut out the two ends of this range and reduce the visible part—pretty evenly—to perhaps half to one-third of its original strength. We say that this reduction over the visual range should be pretty even for if it is not then the scene will be too blue, yellow, green or red, and our perception of colours will be upset. Colours too have a psychological effect, red makes one feel hot and excited, blue cool and perhaps depressed, and green is usually rather restful. So if we have to have coloured vision, a slightly green bias would not be amiss in sunglasses.

Points of Good Design

Any spectacles should be made up of good quality glass, free of bubbles and blemishes

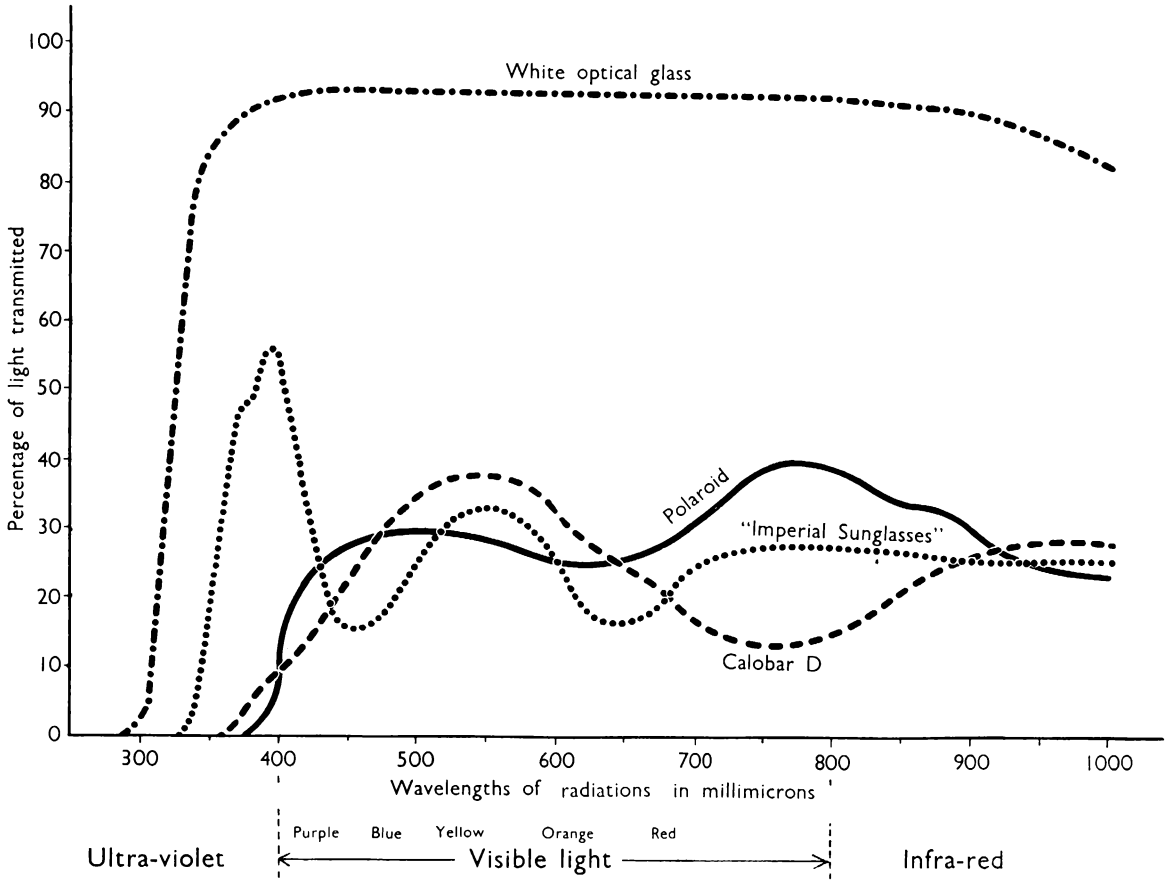


FIGURE 1

which will distort straight lines and cause constant annoyance.

The frames of the spectacles should be well constructed and efficient, and in England the National Health Service has laid down some regulations about frame quality which formed a useful guide for ACA's scientists. The points they made are briefly as follows:

1. The frame should be made for the wearer and should be designed to be easily manipulated.
2. Plastic frames should be made from optical sheet plastic because those made from plastic moulding powders are not so suitable for the insertion of lenses and adjustment of fit.
3. Plastic frames should be made from coloured sheet and not dyed after manufacture since some people are sensitive to dyes and may get a skin rash from such frames.
4. The surface of the bridge should be smooth and suitably shaped to fit the nose.
5. The lenses should be held in place by a central and adequate groove so that they will not easily fall out.
6. The hinges should be strong and efficient and metal is usually the best for this purpose.
7. The sides should be stable and not likely to warp or they will soon allow the spectacles to drop off.

In Australia a sweat bar, which joins between the two lenses and prevents perspiration running into the eyes, is a useful addition and, except that they may perhaps lack glamour, metal frames are cooler to wear and do not obstruct vision at the sides nearly as much as substantial plastic frames—and they have to be substantial to be strong and durable.

ACA's Purchases

When our buyers went out they found that there were so many types and varieties of sunglasses that to test them all would have taken years, so it was decided to buy in different price ranges. ACA therefore bought:

(*a*) One pair from a chain store in Sydney for 10s. 9d.

(*b*) One pair labelled "6 Base" from a chemist's shop in Kogarah—price, £1/4/–.

(*c*) One pair labelled "Imperial" again from a chemist's shop, price: £1/19/11.

(*d*) One pair of "Polaroid", price: £3/19/6.

(*e*) ACA consulted an optometrist who made up a pair from lenses he recommended, in inexpensive frames, price £5/12/–.

These were all brought back to ACA's testers who first examined them and then removed one lens from each to test the transmission of light at the different wavelengths of the spectrum.

The following table gives our comments on the general construction:

It will be seen first that ordinary white optical glass transmits evenly all wavelengths above about 300 millimicrons.

The glass from the "Imperial" spectacles, sample C, kept back most of the wavelengths above 400 mμ, but let through a lot of ultra violet (the big hump in this curve between 300-400 mμ) which is a bad fault as it tends to be very tiring to the eyes.

Polaroid, D, was very good as it cuts off everything below about 400 mμ although it did let through a substantial amount of infra red.

The lenses the optometrist selected were made from a glass known as "Calobar D", made by the British American Optical Company Ltd. of Hatton Garden, London.

This has an excellent performance since it cuts off all the ultra violet and nearly all the infra red, but shows a slight greenish colour because it absorbs least light in this region of the spectrum. ACA considers this material to give good protection with a slight coloration, which is by no means unpleasant.

The two glasses in spectacles A and B were not very satisfactory. The cheapest one A produced a curve, rather like that of sample C with quite an appreciable amount of ultra violet transmitted. The curve for the "6 Base" glasses sample B, was very irregular so that objects would look abnormally coloured although very

SUNGLASSES
Constructional Details

Sample	*Material of frame*	*Hinges*	*Sides*	*Nosebridge*	*Lenses*	*Remarks*	*Case*
A. Chain store, 10/9d.	Moulded, plastic for lady	Plastic	Plastic	Moulded plastic	Glass	Made in Italy	None
B. "6 Base", £1/4/–	Metal, plastic sweat bar, for men	Metal	Metal, plastic ear tips	Plastic pads	Glass	Strong and light	None
C. "Imperial", £1/19/11	Sheet plastic, for lady	Metal	Reinforced plastic	Plastic moulded	Glass	No identification	Cheap plastic
D. Polaroid, £3/19/6	Metal-gilt, for men	Metal	Metal, plastic ear tips	Adjustable plastic pads	Plastic	Very light and well made	Strong, plasticised fabric
E. Optometrist's Prescription, £5/12/–	Heavy shaped plastic, for men	Metal	Wide plastic	Moulded plastic	Glass Calobar D.	Very strong and durable. Marked "Filos"	Solid leather

In the diagram of Fig 1. we have drawn four curves showing the percentage of light of various wavelengths, from ultra violet to infra red, which three of our sunglass lenses transmitted.

little ultra-violet was let through by these lenses and in this respect they were good.

Special mention should be made of Polaroid because this material is unique in that it polarizes, or changes the character of, the light which passes through it so that as well as being tinted and reducing the visible radiations by about 2/3rds, it greatly reduces reflection from shiny surfaces such as the paintwork on a car, wet road surfaces, or areas of water.

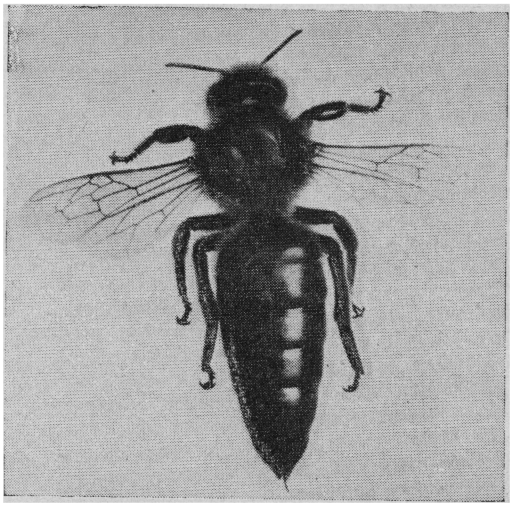
ACA's Recommendations

In this set of purchases, ACA got what it paid for—better frames and better performance in the more expensive price range.

If you are prepared to pay only a few shillings you must examine your purchase carefully. The frames may not last long and the lenses will be of doubtful efficiency. They will not harm your eyes but they may not give the protection you expect.

If you regard a pair of good sunglasses as an investment to last some years, then ACA recommends a pair of genuine Polaroid spectacles or a visit to a good optometrist who will sell you glasses made to be a comfortable fit to your face and containing lenses such as Calobar D, which will do what you require. If you normally wear spectacles to correct your vision he can make these in such a suitable glass and this is by far your best policy, since it saves fiddling with clip-on lenses and having four surfaces to get greasy and dirty. Spend, therefore, as much as you can afford in this way and take good care of your sunglasses and they will give you comfort and satisfaction for many years.

QUEEN BEE JELLY



'Nature's most mysterious gift to Beauty'
'Stored vital strength'

'Remarkable benefits . . . mental and Physical alertness . . . of especial value to men and women in business and public life whose work . . . subject them to strain, stress, anxiety and nervous tensions . . .'
'Help your skin recapture and keep the bloom of a young, young beauty'

So run some of the advertisements for Queen Bee Jelly.

For this report, requested by many of our members, we have not carried out tests of our own. They would not be practicable. We might start to test claims for longevity. We should all be dead before the results came through. Mental and physical alertness, look of youth—these are all too vague and subjective to be measured. So what we have done is to tell you what Royal Jelly (Queen Bee Jelly) is known to consist of and what it is known to do—to bees; what is the evidence, or lack of evidence, for what it does to human beings; and how much it costs to buy.

Queen Bees

In a colony of honey bees, the grubs which are to become queens are fed abundantly on a substance known to the public as Queen Bee or Royal Jelly. This is made in certain glands of worker bees. It is fairly certain, also, that the adult queen bee, when laying her eggs, continues to be fed largely, if not entirely, on Royal Jelly. So Royal Jelly appears to contain substances which are able to produce a queen bee, rather than an ordinary bee, from an undifferentiated grub.

The queen bee differs from the workers, not only in laying eggs, large numbers of them (about 400,000 altogether), but also in length of life. She usually lives for two or three years, sometimes longer, whilst a worker bee lives for five or six months if it is born in the autumn or only for four or five weeks if it is born in spring or summer, when it is more active.

But neither the fecundity nor the longevity of the queen is unique. Many fishes, for instance, produce far more eggs than a queen bee. And the queen bee leads a very much less active life than the worker bee. In fact, it has been calculated that the worker bee uses up oxygen 20 time as fast (*i.e.* is 20 times as energetic) as a queen bee. So a queen bee might be expected to live longer—which she does.

extensive and lucrative trade in preparations containing Royal Jelly. Often, the Royal Jelly itself is in very small amounts, diluted with mead or honey. Advertisements for the preparations tend in general to be vague and unspecific, like those already quoted, but some of the conditions which they are said to benefit include general fatigue, hypertension, degeneration of the arteries, disturbances of circulation, insomnia, inability to concentrate, digestive weakness, malnutrition, obesity and lack of sexual vigour. In a beauty cream, the addition of Royal Jelly is said to help to stimulate cell renewal and to prevent and eliminate wrinkles.

What is in Royal Jelly

The main constituents of Royal Jelly are water, protein, carbohydrates and fat. Then there are small quantities of vitamins and mineral elements, a variety of other substances in small quantities and, finally, traces of some substances which have not yet been identified.

Vitamin B

Many of the advertisements and pamphlets imply that at least some of the extraordinary properties of Royal Jelly are due to the nutrients, and more especially the vitamins which it

Editor's Note:
The goods referred to are U.K. products and the prices are in £Stg. They should not be confused with products marketed in Australia.

BRAND	*CA Paid* £ s. d.	*Length of (days)*	*Weight of Royal Jelly (milligrams)*	*Price per gram of Royal Jelly* £ s. d.	*Price per of preparation*
Apiderm	5 2 6	24	Not given	—	4*s.* 3*d.* (1 ampoule)
Apiserum	5 2 0	24	250	20 8 0	4*s.* 3*d.* (1 ampoule)
Bouchardeau	5 0 0	About 30	2,000	2 10 0	About 3*s.* 4*d.* (1 teaspnf.)
Fontaine Royale Holzinger)	5 5 0	About 40	Not given	—	About 2*s.* 7*d.* (10 drops)
Fontaine Royale (Pampanyl Dragees)	1 5 6	Up to 25	Not given	—	From 1*s.* to 2*s.* (2 to 4 capsules)
Laidabeille	5 5 0	26	1,250	4 4 0	4*s.* 0*d.* (1 ampoule)
Nectarene	2 2 0	21–24	About 1,000	2 2 0	About 1s. 9*d.*–2*s.* 0*d.* (½ teaspoonful)
Pan-A-Gel	2 5 0	35	150	15 0 0	1*s.* 3*d.* (4 capsules)
Rezesta-B	5 5 0	30	1,500	3 10 0	3*s.* 6*d.* (1 capsule)
Visroyal	1 18 0	About 30	250	7 12 0	About 1*s.* 3*d.* (1 teaspnf.)

In spite of these facts, many people seem to have the idea that Royal Jelly can impart the characteristics of fertility and long life to human beings as well as to bee grubs, and there has recently grown up in many countries an

contains. Let us then look at these. There is little or none of the vitamins A, C, D or E. There is, however, a variety of members of the vitamin B group. Some of these are known to be of importance in human nutrition—for example

vitamin B_1 (thiamine), nicotinic acid and vitamin B_2 (riboflavin). Some—pantothenic acid and biotin, for example—are unlikely to be of any practical importance since the ordinary diet contains quite enough of them.

In assessing the value of the vitamins in Royal Jelly one has to take into account the amounts it contains. It is not good enough, for example, to say that Royal Jelly contains riboflavin, and that if you go short of this you would get sore eyes and tongue, and an inflammation of the skin. What you need to know is how much riboflavin there is in the amount of Royal Jelly you are likely to consume, in relation to the amounts that the body needs.

The composition of Royal Jelly varies considerably according to conditions in and around the hive, time of collection, whether the jelly is fresh or dried, and so on. And different analysts have consequently found widely differing amounts of the B vitamins. In what follows, we have given Royal Jelly the benefit of the doubt by using high rather than low figures.

The average amount of riboflavin in one gram of fresh Royal Jelly is about 10 micrograms—that is, 10 millionths of a gram. For a moment, let us suppose your preparation gives you as much as a gram of Royal Jelly. Since you need about 2,000 micrograms of riboflavin each day, the 10 micrograms you get in one gram of Royal Jelly make up about one two-hundredth of your daily requirement of riboflavin. It is rather like saying that you need to take two pints of fluid a day, and so a teaspoonful of Tinker's Tonic is good for you because it supplies one two-hundredth of your daily needs of fluid.

These proportions are roughly the same for thiamine; one gram of Royal Jelly gives you about one two-hundredth of the thiamine—and slightly more of the nicotinic acid—you need in a day.

The calculations we have made are on the basis that the Royal Jelly preparation comes to you in doses of one gram of Royal Jelly a day. In fact, you will, at most, get about one-fifteenth of a gram a day; some preparations will give you as little as one two-hundred-and-fiftieth of a gram (see Table). You would need, then, between 2,000 and 50,000 daily doses of these preparations to give you the amount of these three vitamins which you need for one day. This would cost you something between £350 and £4,000 a day.

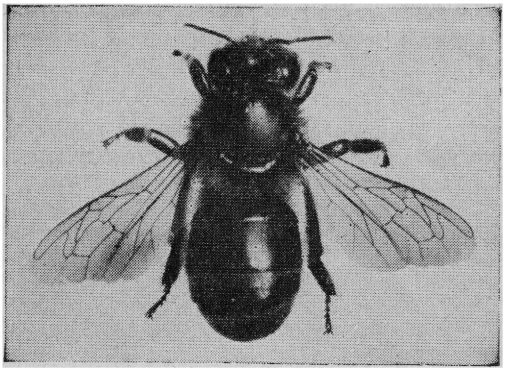
It so happens that both of the other B vitamins mentioned above—pantothenic acid and biotin—are contained in rather higher amounts in Royal Jelly than in many other foods. For example, there is about five times as much pantothenic acid in Royal Jelly as, for instance, in liver, a very rich source. But this still means that one four-ounce helping of liver would give you at least 400 times as much pantothenic acid as the best Royal Jelly preparation's daily dose—and could easily give you 6,000 times as much as some of the others. As we have said, there is in any case no chance of anyone being short of this vitamin or of biotin, so the amount you would get from Royal Jelly is not only negligible but quite unnecessary.

Finally, an analysis made of one Royal Jelly preparation and beer, showed that one pint of beer contained about 30 times as much thiamine, 40 times as much riboflavin and pantothenic acid, and 400 times as much nicotinic acid as a daily dose of the Royal Jelly preparation.

Of the other known substances, present in very small amounts in Royal Jelly, we may say that no one has shown that they have any effect in man, in these minute quantities. And the same might be presumed of the unknown substances. Even if beneficial to man, it seems hardly possible that they could be present in quantities sufficient to be effective.

Effect in Practice

We can say then that there is no reason whatever to think that the vitamins in the Royal Jelly contained in the daily dosages of any of the existing preparations are likely to have any effect in man. So we are left with having to examine the evidence that, however unlikely it is, Royal Jelly nevertheless improves health, vitality and looks. To be acceptable, the evidence must, of course, be properly controlled. That is to say, we should have to see tests done in which some human subjects were given one or other of these Royal Jelly preparations, whilst exactly similar subjects were given similar-looking and similar-tasting preparations without any Royal Jelly. Neither the subjects



nor the testers should know who was getting which preparation. Such a 'double blind' procedure is recognized as the only way of making certain that purely psychological factors were not affecting the results. This is particularly necessary in situations where the effect of treatment is claimed to be in such vague and general terms as vitality and well-being.

As far as we know, no such tests have been reported on any preparation containing Royal Jelly. Experiments have been made with Royal Jelly on small numbers of animals—rats, mice, rabbits, chickens and guinea pigs—but the results have been largely negative. And published experiments on human beings have been carried out without controls, so are not conclusive.*

Royal Jelly as a Cosmetic

The presence in Royal Jelly of vitamins of the B group can have no influence on normal skin, as there is ample evidence that few people in this country suffer from deficiencies of these vitamins. Furthermore, since they are water soluble, they are in any case less likely to be absorbed by the skin. We may therefore disregard any claims made for them. Another constituent is a fatty acid—10-*hydroxy decenoic acid.* Fatty acids have been found on human skin and are derived from sweat, through the action of bacteria on the fatty substances secreted by the modified sweat glands in the armpits and elsewhere. These acids, far from having a rejuvenating influence, merely contribute to the often unpleasant odour from the armpit. It is improbable that 10-hydroxy decenoic acid would differ from other hydroxy fatty acids when applied to the human skin and no evidence has been published to show that it has any specific effect on human tissues. No other known constituent of Royal Jelly has been shown to possess any qualities which any good cosmetic cream of the same type does not possess. And, as with the preparations, meant to be eaten, there is no reason to suppose that there could be enough of any *unknown* constituent for it to be effective.

Altogether, in fact, the incorporation of Royal Jelly as a rejuvenating agent in cosmetics savours of sympathetic magic.

Some Royal Jelly cosmetics are:

	£	s.	d.
APIELLA			
Hand Crem		4	9
„ „		14	3
Skin Cleanser	1	1	0
Skin Vitalizer		8	6
„ „	1	15	9
Travel Kit		12	10
FONTAIN ROYALE (Holzinger)			
Hair Lotion	1	11	0
Skin Nourishing Cream	2	9	0
MANNERS			
Gentleman's Cream	3	3	0
Beauty Cream 'based on Royal Jelly'	3	3	0
NECTARENE			
Skin Food		15	0
„ „	1	5	0
ORLANE			
Cream, jar	1	11	0
jar	2	13	6
tube	1	5	0
Elixir	1	5	0
Eye Balm	1	0	6

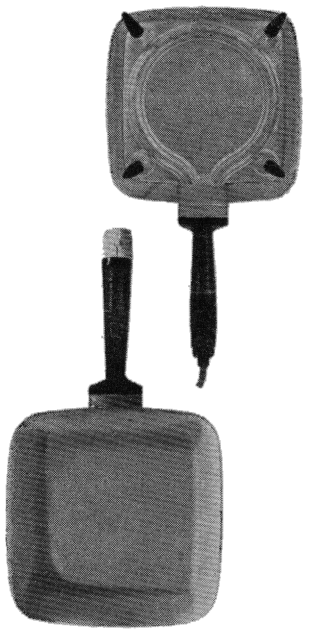
Conclusions

There is no evidence, either theoretical, or from published practical tests, that any of the existing preparations of Royal Jelly produce any effect other than can be easily achieved with any other expensive material which the customer believes will do him good. In our opinion, Royal Jelly can be added to the long list of magic substances which, since the beginning of history, human beings have persuaded themselves will make them younger, healthier and more beautiful.

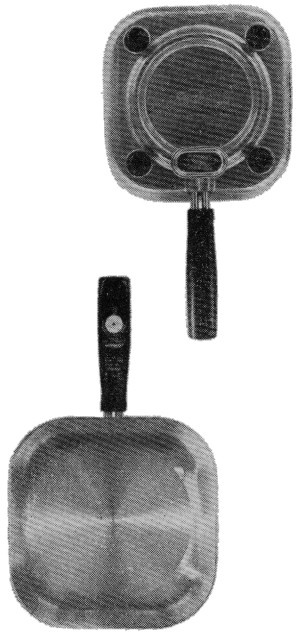
This article is reprinted from "Which?" (March, 1960), the magazine of the Consumers' Association Ltd, of London.

*See *Bee World* 39 : 254-264, 277-286 (1958)

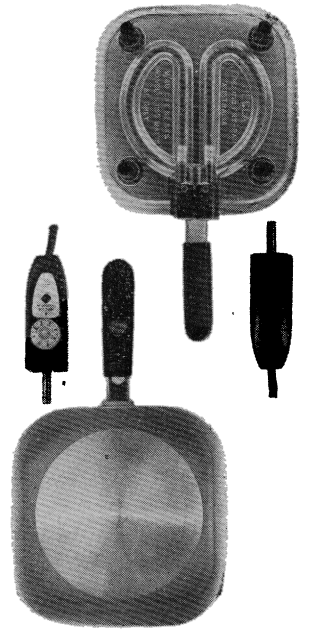
ELECTRIC FRYING PANS



MORPHY-RICHARDS
*£12/7/6
Cat. No. FP1
With metal lid



SUNBEAM
*£12/7/6
Model AFP 10A
With glass lid



HECLA
£12/15/-
Cat. No. SK5
With glass lid

**Actual prices ACA's shoppers paid in three Sydney stores.*

All pans were of similar size—"medium".

TABLE

Measurement Tests

	Morphy-Richards	*Sunbeam*	*Hecla*
1. Weight	4 lb. 8 oz.	3 lb. 14 oz.	4 lb. 3 oz.
2. Frying area (square inches)	70	76	78
3. Cooking height (inches)	3¾	3 5/16	4 5/16
4. Electrical insulation resistance (megohms)	20	Over 40	Over 40
5. Power loading (volt-amps)	1220	1160	1300
Set temperature for heating tests: 350°F.			
6. Temperature at centre of pan after one hour	334°F.	365°F.	351°F.
7. Temperature differential of thermostat	13°F.	4°F.	103°F.
8. Temperature reached when first switched on	443°F.	416°F.	494°F.
9. Temperature variation over frying area	38°F.	13°F.	See text
10. Time to reach set temperature	9½ mins.	5¼ mins.	8¼ mins.
11. Average ON-OFF cycle time	1 min. 20 secs.	1 min. 20 secs.	4 mins. 10 secs.
12. Table-top temperature (under pan)	100°F.	109°F.	111°F.

Your perfect wedding gift, Christmas present, or just an extra for the home is the modern electric frying pan. Gone is the black and greasy pan with the ever-present risk of a burnt meal or fat in the fire; and in its place is this gleaming aluminium version, which you can use on your dining table.

ACA bought all the electric frying pans which were available and the total came to three—we had heard about the HOTPOINT but although ACA's shoppers rang up the manufacturer we were told we would have to wait a little longer.

The three frying pans are illustrated on the opposite page with a plan view of both sides and our test results are printed below.

ACA's Tests

The tests ACA's scientists made were of two kinds; first a detailed scientific examination of their physical and electrical features and heating performance. These we shall discuss first and you should look at the table under the photographs.

1. *Weight*: You will see that SUNBEAM was lighter in weight than each of the others which may mean a little less fatigue for the cook.

2. *Frying area*: Not much to choose between them but in this size—medium—the HECLA was just a little larger on the flat frying surface than the others.

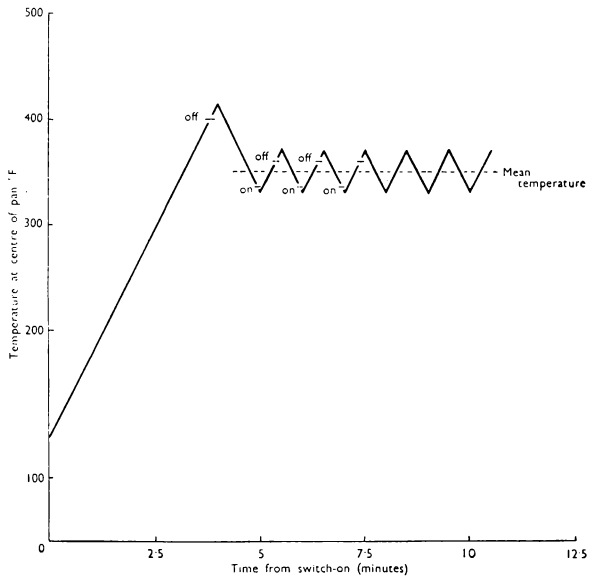
3. *Cooking height from pan to lid*: HECLA was the best in this regard, but you can buy a deeper lid for the SUNBEAM if this point seems to be important.

4. *Electrical Insulation*: All three were very good indeed in this test which indicates simply that an early breakdown is not very likely.

5. *Power loading*: ACA did this test with an electricity supply adjusted to precisely 240 Volts A.C. connected to the pan and measured the current when the thermostat was switched on. The result given is this current multiplied by 240 Volts and gives a measure of the power, which, since all the pans are similar in design, is closely related to the loading in watts which in all three cases was claimed to be 1,150. You will see that SUNBEAM was the nearest to this figure.

Heating Tests

The next seven tests were made with the pans connected to a regulated electricity supply kept at 240 Volts and were made with special thermometers which were in the form of very thin copper discs, and which operated electrically to give continuous recordings of temperature on instruments like that illustrated in the Vacuum Flask article. In every case we set the pans to 350°F. because this was a usual cooking temperature.



Before discussing these tests let us look at Figure 1. This is a diagram of the temperature rise of a typical frying pan, recorded from the time of switching on until it had settled down to a steady on-off cycle. This diagram is not taken from any one of these pans but shows the sort of temperature changes our scientists measured. You will see that when you switch on your pan the temperature goes up pretty steadily and then the thermostat comes into action and cuts off the power until the pan has cooled enough for the current to switch on again. This first temperature of switching off is always higher than the temperature to which the pan settles, because time is taken for the heat to be conducted to the thermostat and the better this conduction is, the smaller this first rise will be and the quicker the pan will come to equilibrium. The better this heat conduction to the thermostat is the less will be the change in temperature between the switchings on and off and

the closer will the temperature of the pan remain. If the pan is to be kept at a constant temperature this conduction must be very good and also the thermostat must be very sensitive so that it will switch on and off for a small change in the pan temperature. This change we call the temperature differential of the thermostat, and the smaller it is the better.

6. *Temperature at centre of pan after one hour*: This should be 350°F., but in one case—SUNBEAM—the knob, which is rather small, could not be set with the ease of the other frying pans tested. You will see that all three were quite good on this count and did not vary by as much as 20°F. from the temperature chosen.

7. *Temperature differential of thermostat*: This was the change of temperature at the centre of the pan corresponding to the switching on and off of the thermostat. The SUNBEAM had the smallest change here and the HECLA the largest. This is because the best position for the thermal switch is under the pan and attached closely to it and the SUNBEAM is constructed in this way. The HECLA had a "Thermaplug" which included a metal finger containing the thermal switch loosely fitting into a socket under the pan. This loose fit means poor conduction of heat into the switch so the differential cannot be very small in a design such as this. ACA's scientists did not consider this arrangement to be a good one.

8. *Temperature reached when first switched on*: This is the temperature reached at the first switch-off and again will be smallest when the thermal switch is under the pan and closely attached to it, so SUNBEAM again scored well in this test whereas HECLA showed a very high temperature. MORPHY-RICHARDS was a close second to SUNBEAM.

9. *Temperature variation over frying area*: The temperature was measured at five points on a diagonal from corner to corner and MORPHY-RICHARDS showed the most even temperature in this test. HECLA could not be tested in this way because the differential—or temperature swing—was too great.

10. *Time to reach set temperature*: This varied from just over three minutes for SUNBEAM to 9½ minutes for MORPHY-RICHARDS—the shorter this is, the better.

11. *On-off cycle time interval*: The shorter this is the better. Both MORPHY-RICHARDS and SUNBEAM were good in this regard. The HECLA has such a long time cycle that food might even be cooked during this time!

12. *Table top temperature*: All were good and not likely to burn a polished table, but MORPHY-RICHARDS having rather higher legs was the best.

Design Features

1. *Ease of setting temperature.*

MORPHY-RICHARDS has a good, big knob and is easy to read and set. SUNBEAM has a rather smaller knob and setting is not quite so easy. On the HECLA, the knob is under the handle and our tester actually burnt his fingers when adjusting it—it is also rather difficult to see, although a cut-out in the handle appears to have been made for this purpose, but it does not appear in the photograph on the instruction book cover.

2. *Relation between cooking instructions and setting temperature.*

If the knob is marked 300°, 320°, 340°, 360°, etc, the instructions on the handle should correspond. This is so for the SUNBEAM and MORPHY-RICHARDS, although in this case the steps are 25°F., *i.e.*, 300°, 325°, 350°, 375°, etc.

But with the HECLA the instructions on the handle are in twenty degree steps, *i.e.*, 320°, 340°, 360°, but the knob is marked 300, 325, 350, 375, etc., which is rather confusing!

3. *Ease of handling.*

SUNBEAM is nicely balanced and has a well shaped handle.

MORPHY-RICHARDS is a good second.

HECLA is very awkward and the handle ends in a pressed metal attachment to pan and this has sharp edges which could be touched. The handle is also set at a rather steep angle.

4. *Ease of cleaning.*

HECLA, since the Thermaplug can be removed and there is no worry about immersion in water, is best; but the socket for the Thermaplug is liable to get caught up in the dishcloth.

With SUNBEAM and MORPHY-RICHARDS care is needed not to immerse above the warning line.

5. *Radio interference.*

All three caused clicks in the radio when the thermostat switched on and off—a point the manufacturers could easily overcome—but SUNBEAM was a little quicker at each switching so that this was not quite so obtrusive.

7. *Lid and fit.*

SUNBEAM (glass lid)—very good fit.

HECLA (glass lid)—very good fit.

MORPHY-RICHARDS (metal lid)—Our first purchase had a battered lid so, after examination, ACA sent the shopper back to get it changed. The second lid was better, but, although not misshapen, it still was a poor fit and the edges of the metal are sharp and liable to cause injury in cleaning it.

8. *Simplicity of mechanism.*

ACA looked at the mechanism and came to the following conclusions:

SUNBEAM has a simple and ingenious thermostat with very few individual parts.

MORPHY-RICHARDS has a more elaborate construction with correspondingly more component parts.

HECLA has the Thermaplug which is replaceable as a unit, but does not satisfy the requirements of a good thermostat as discussed above.

9. *Electrical connections.*

SUNBEAM and HECLA were good—we rather preferred SUNBEAM of the two. But with MORPHY-RICHARDS the pins do not go far enough into the rubber connector and could easily come out.

ACA recommends:

First

SUNBEAM Electric Automatic Frypan.

Second

MORPHY-RICHARDS Automatic Electric Frypan.

FOOTNOTE

Since ACA tested the frypans a new model SUNBEAM has come on the market. This will be examined at a future date together with HOTPOINT.

Are you handy with tools or a paint brush?

During the interval between the publication of our first issue and the present time, the Council has been very busily engaged in finding a home for ACA. As we go to press the lease is about to be signed for premises near the Dental Hospital in Sydney. This is a good central position for Head Office and we are lucky to get the chance to rent space in this location. The premises are by no means luxurious — ACA cannot afford luxuries at this stage — but there is about 1700 square feet of good usable space with a double-fronted shop entrance.

The building is not a new one and some redecoration is needed, but the Council is enthusiastic about this venture and can see that here we shall have space for our offices and basic testing laboratory for some years ahead.

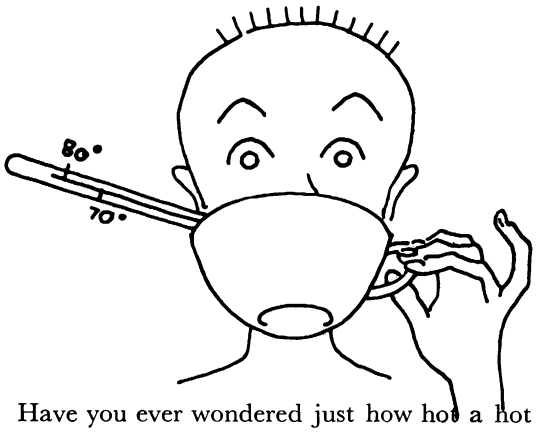
How about joining us at a working bee to paint out the place and fix up benches and fittings? It is the keen enthusiasm of the Council which has been responsible for the success of ACA so far and we know that among our members there must be many more enthusiasts who want to help. If you are good at carpentry and painting we will be glad to meet you and you will have a chance to make ACA a part of your personal interest.

We also need a signwriter to paint our shop windows and make a notice board or two. This requires special ability which you may not have, but if you know someone who is talented in this way perhaps you could interest him to come along, too.

This invitation of course can only apply to those who can easily get into Sydney at week-ends, because this will be the best time to get on with the job.

If you can help, please ring the Secretary (Mrs. I. M. Sheahan) at FX 8758 and leave your name and telephone number so that we can contact you.

HOW HOT IS A HOT CUP OF TEA?



Have you ever wondered just how hot a hot cup of tea is? Perhaps it is more likely that you have wondered how hot tea is when it is just as you like it. ACA set out to find out something about the temperature of hot tea, mainly because the information was required in connection with the testing of vacuum flasks, reported in this issue.

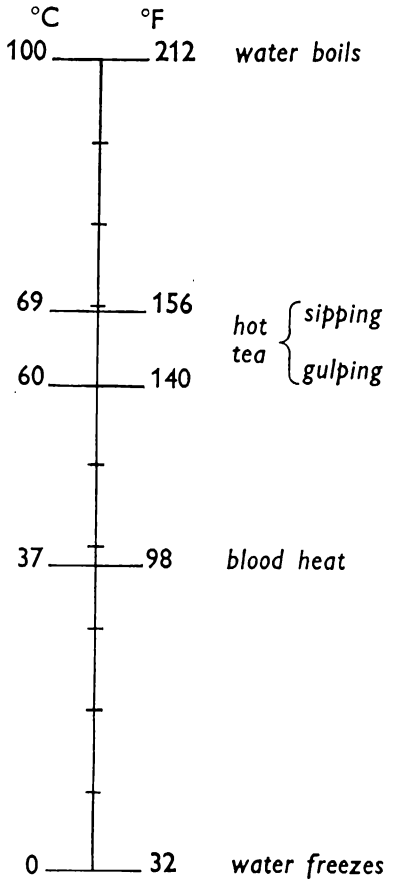
The question of how hot you *like* to drink it would have been too great a task to investigate for present purposes; the experiment would have required the co-operation of a hundred people or more, because preference varies widely. However, the question, *How hot is tea when it is just a little too hot to drink*? turns out to have a fairly simple answer, as ACA's investigators anticipated.

ACA was favoured with the assistance of ten young ladies attending a course in Domestic Science. Six of the young ladies were appointed "experimental tea drinkers". They patiently continued the experimental sipping of hotter and hotter cups of tea, which, we are sad to relate, were also getting weaker and weaker. However, we are sure the strength of the tea was of little importance for the experiment.

The result showed that the temperature at which tea is too hot to drink from an ordinary cup*, even in sips, is much the same for different people, namely about 69°C. (156°F)†. Of the six subjects, one pronounced the tea too hot at 67°C., four at 69°C. and one at 71°C.

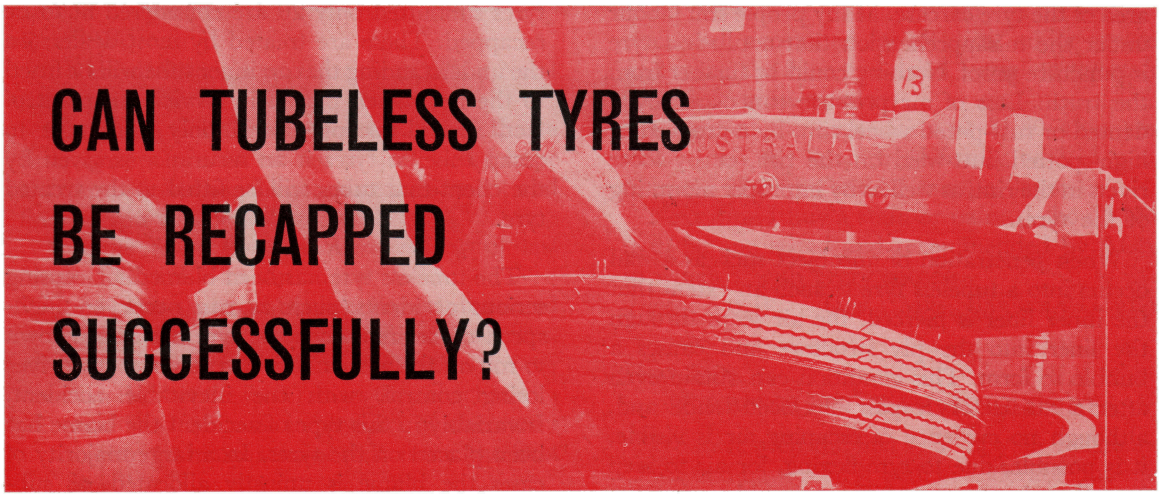
We should emphasize that this result corresponds to the drinking of tea in the way most people drink it—*in sips*. It is found that the highest temperature at which it can be drunk in gulps is much closer to 60°C. (140°F.). The following scale shows how these temperatures compare with the boiling point of water (100°C. or 212°F.), blood temperature (37°C or 98°F.) and freezing point of water (0°C. or 32°F.).

These experiments answered ACA's question, and provided a background for the vacuum flask test.



*Better-quality hotel ware.

†The temperature of the tea in the cup immediately before sipping.



CAN TUBELESS TYRES BE RECAPPED SUCCESSFULLY?

The success or failure of tubeless tyres has been a controversial subject since their introduction to the Australian motorist in 1955. From the outset they have proven much more troublesome than the conventional type tyre fitted with an inner tube. Before making any assessment of the ability of tubeless tyres to withstand the process of recapping and subsequent return to service with the same margin of safety as was built into it when new, it is important to have a full appreciation of the factors involved. A tubeless tyre suffers from exactly the same faults that produce ultimate tyre failure in the conventional tyre, with one difference, that in the case of the tubeless tyre these faults produce much more rapid effects.

The basic principle of any tyre design is that the compressed air held within the tyre actually supports and carries the vehicle and its load. That this air be maintained at the recommended pressure according to tyre size is the most important single factor controlling the serviceable life of the tyre. Each size of tyre is designed to deflect to a predetermined degree when under a given load and inflated with the specified air pressure. This anticipated deflection and bulge in the tyre sidewalls results in proper contact of the tread area with the road surface.

Under-inflation is the greatest single enemy that the tyre has to contend with, be it tubeless or conventional. When a tyre is operated with insufficient air pressure, the sidewalls are subject to a flexing action that is beyond the limits for which they were built. In each revolution of the tyre, the sidewalls are forced to bend and recover. The lower the inflation pressure, the more violent the flexing becomes, and high internal temperatures are built up in the tyre casing. This heat softens the rubber protecting the casing cords, and they literally become weakened to the extent that they are unable to withstand ordinary road shocks.

As correct inflation pressur is the most important controlling factor in obtaining satisfactory safe tyre service, the correct time to establish this pressure is of equal importance.

Tyres should be inflated to the recommended pressure when they are cold or before the anticipated outing in the family vehicle is commenced, not after the vehicle has travelled a mile or more to the nearest service station. By this time the damage has been done, because the pressure was below that specified. The violent flexing that has taken place will also have created heat, so that an incorrect pressure reading would be obtained, were a measurement to be made, because the generated heat will have raised the pressure without increasing the volume of air. When the tyre cools it will return to the under-inflated condition that it had before being driven.

The tubeless tyre differs in its construction from the conventional tyre only in so far as it has a thin Butile liner cemented to the inside of the casing to retain the air pressure instead of an inner tube. Sealing of the air along the contact area of the tyre with the rim is provided by a series of slightly raised concentric rings, moulded into the rubber in the bead zone of the tyre. This inner liner is much thinner than ordinary inner tubes and will under certain conditions allow air to pass through it into the ply

area of the tyre carcase. Many people still labour under the misapprehension that a tubeless tyre is puncture proof. Nothing could be further from the truth. Loss of air pressure can occur by a dented or rust-pitted wheel rim, by a grooved or high-spotted butt-weld on the rim, or by loose rivets in the rim, as well as by improper mounting of the tyres.

When penetration of an object such as a nail occurs into a tubeless tyre to such an extent that the inner liner is pierced, the air seeps through the liner into the ply structure and causes a bubble to form. This condition can obtain even after a satisfactory repair has been made and, although no evidence of escaping air is visible, it is possible, due to tyre flexing, for air to seep into the ply structure. These bubbles continue to grow in size, causing a separation of the plys and ultimately complete tyre failure.

These cord separations are not confined to any particular section of the tyre, but appear at various places, such as the bead zone, sidewall or shoulder, which is the portion of the tyre where the tread and sidewall join. The loss of pressure through seepage is the first step in a rapidly accelerating movement to final tyre failure, or rejection for recapping, because it produces under-inflation, with its resultant heat build-up. It could be thought that too much emphasis is being placed on the maintenance of correct inflation pressure. Be assured that your tyre troubles will be minimised if pressures are correctly maintained As already stated, air seepages through the inner lining are the primary cause of the very high percentage of tubeless tyres being rejected for recapping The thin inner liner, or air seal, is an integral part of the tyre casing and must move with it. Even though no penetration has occurred, relative movements of the liner and casing in the shoulder area cause fatigue of the liner that may ultimately allow air seepage through it into the cord or ply areas. Once seepage of air starts, it is progressive until the separation of the cord layers or plys becomes so great that the tyre fails.

Reputable tyre recappers subject tubeless tyres to several types of test before accepting them for treatment, such as infra-red lamp and air injection at 120 lb. per sq. inch into the carcase; these are by far the most popular and successful methods to determine whether ply or cord separation exists. The percentage of rejection for treatment is about 80 per cent., or for every 100 tyres submitted only 20 are considered fit to be recapped. These are treated by most dealers on the understanding that an inner tube will be fitted to the tyre when placed in service. In point of fact, several recappers will only undertake to recap tubeless tyres if an assurance is given by the client that tubes will be fitted to the treated tyre.

The tubeless tyre has been blamed for causing serious accidents, such as can occur on high-speed cornering, when the tyre has been known to roll off the wheel. This can result in the driver losing control, with the inevitable accident. Invariably in this type of accident the blame has been placed on the tyres. In a large majority of cases the blame is unjustly allocated, as subsequent investigations have shown, the old bugbear, under-inflation, was the real cause of the tyre rolling off the wheel. The reason why the tyre leaves the wheel on high-speed cornering when under-inflation exists is readily understood when the physical conditions which apply are studied. Let us observe a vehicle moving in a straight line at 50 m.p.h. It has, at this speed, gained momentum which tends to keep it moving in the same direction. Suppose that suddenly the vehicle is turned from its straight course to the left. It tries to continue in the original direction, so that the right-hand front wheel has tremendous stress suddenly thrust upon it. All this stress is on the tyre, and it pulls away from the outside edge of the rim. The air escapes, and with nothing to hold it in place the tyre rolls right off the wheel. Although the other front wheel is subjected to somewhat similar conditions, the stresses are not so great. If correct inflation pressure had been maintained, the possibility is that the tyre would have remained in place. The whole point of the matter is that these things can, and do, happen, and until such time as tubeless tyres can be produced, tested and proven to be safer than they are today, the new-tyre purchaser would be well advised to buy the conventional type tyre and tube. Very definitely, if you have a tubeless tyre recapped, make sure an inner tube is fitted. In some quarters it is thought that the tubeless tyre represents a planned lifetime for tyres, or a one-tyre-one-tread programme. When the cost of tubeless tyres is compared with that of conventional types, you find that you are paying for a tyre and tube without getting the tube. Good for the manufacturer but not so good for the consumer!

Letters to the Editors

Dear Sirs,

I was interested in your article in *Choice* No. 1 on Frozen Foods.

There is a point here, however. I feel that a little more is needed on this subject, and I hope that in time and as you get more equipment and finance you will be able to tackle it.

I quote from *Electrical Merchandising* of last November 30th—an American weekly.

> "Over-the-road hauliers haven't insulated trucks that can maintain 0°F. for long runs. . . . Surveyors found no backroom storage in a third of the 7,000 stores they checked . . . and display cases in a third of the stores registered temperatures well above the frost line."

If hauliers in the U.S.A. don't have trucks that can keep foods at 0°F., if stores there don't have backroom storage to keep frozen food at this temperature, do their Australian counterparts measure up?

Choice should not merely recommend standards. It should let us know whether the standards are being observed. If the American experience is any guide, there is a grave danger that frozen foods are being improperly kept.

The average customer cannot investigate backroom storage or refrigerated trucks, and it seems curious that the CSIRO thinks he can. *Choice* must do it for him.

Congratulations on your journal.

Yours faithfully,

(*Sgd.*) CHRIS. MASTERMAN.

South Yarra, Victoria. 23/5/60.

Dear Sirs,

May I, while my heart and back still ache, tell you of my experience with a floor stain? It was essential that the floor in question should dry *quickly*, so the purchase was made primarily on those grounds.

I chose a stain called "Quick". This product made no specific printed claim to be quick-drying but the tin bore a picture of a clock, five hours of which were illuminated and the hands stood four hours apart. The salesman assured me that it would dry in four hours, and I, feeling very worldly-wise, decided that it would probably dry in six.

The label said that any grease, wax or dirt on the floor would retard drying. The floor had, I knew, NEVER been waxed, but it was very dirty and perhaps in places greasy. Seven buckets of water, half a tin of cleanser, and two packets of steel wool accounted for all dirt and/or grease, and when the floor had dried I applied the stain according to instructions.

I finished the application at 11.50 a.m. yesterday and the floor dried finally at 3.15 p.m. today — 27 hours and 25 minutes later.

Next time I buy a stain or paint, I should like it to be one tested and recommended by ACA, to which I wish every success.

Yanco, N.S.W. (*Sgd.*) MRS. BARBARA GORDON.

Dear Sirs,

SORBITOL IN SLIMMING CURES

We have seen the first issue of your magazine *Choice* and have read it with considerable interest and compliment you on its concept.

However, we should like to draw your attention to a statement made in the article entitled "Slimming Cures" on page No. 11 in the last sentence of the paragraph immediately under the sub-heading "Substitute Foods". The sentence in question reads: "The same comments apply to sorbitol, which is rapidly converted to carbohydrate in the body". This we believe to be an incomplete and misleading statement.

It is a recognised feature of sorbitol that it can be utilised as a source of energy by the human body, but that it is only absorbed slowly. This property is made use of in the preparation of diabetic foods and all authorities agree that absorption is relatively slow.

After absorption there is some evidence that it is not completely converted to glucose in the body and that the average diabetic patient can utilise sorbitol without adversely affecting his insulin requirements. These views have been expressed by the Medical Advisory Committee to the British Diabetic Association.

We submit that a person reading the above article would gain the impression that sorbitol was similar in behaviour to glucose, and, to correct this impression, we would appreciate publication of this letter in a future issue of *Choice*. A brief bibliography* is appended of technical literature which supports the accuracy of our contentions. (*Sgd.*) W. S. CHAMBERS.

C.S.R. Chemicals Pty. Ltd., Rhodes, N.S.W.

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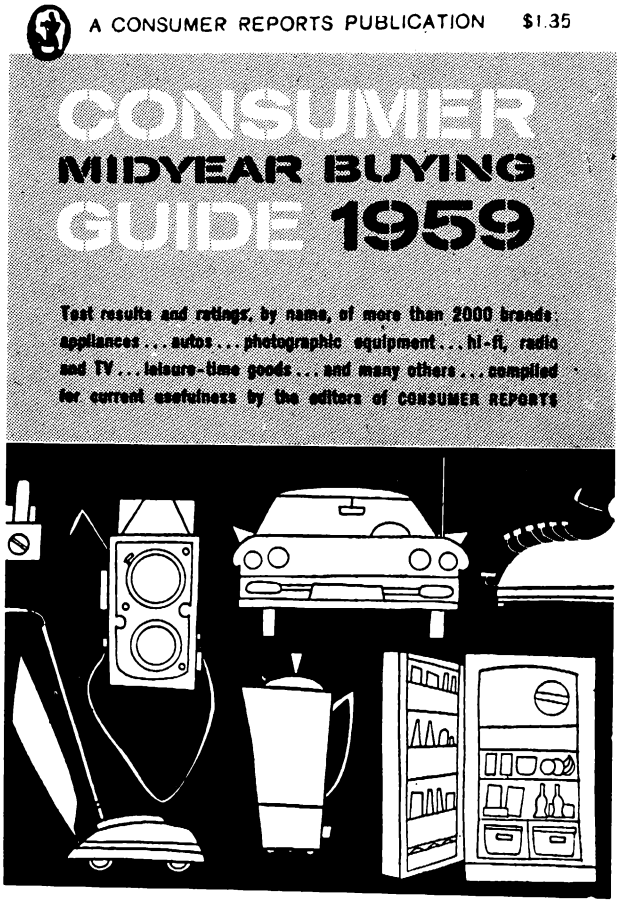
*"Sorbitol for Diabetics": *Lancet*, 225, 1257-8 (1933).
"Mannitol and Sorbitol as Dietary Constituents": *Nutrition Reviews*, June, 1954, p. 178.
"Clinical Use of Sorbitol as a Sweetening Agent in Diabetes Mellitus": *The American Journal of Clinica Nutrition*", January-February, 1956, p. 61.

SPECIAL OFFER STILL OPEN TO MEMBERS

ACA takes pleasure in announcing that in association with Consumers' Union of U.S.A. arrangements have been made to let any member have one copy of:

The CONSUMER MIDYEAR BUYING GUIDE 1959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Test results and ratings, by name, of more than 2000 brands: appliances . . . autos . . . photographic equipment . . . hi-fi, radio and TV . . . leisure-time goods . . . and many others . . . compiled for current usefulness by the editors of CONSUMER REPORTS

This is Consumers' Union's up-to-date summary covering about eighteen months of consumer reporting. It is a compact-sized book, 6 x 9 inches, with 192 pages packed with information.

Although the *Midyear Buying Guide* is American, it contains valuable general information and articles about the points to look for when buying goods.

The *Midyear Buying Guide* is sold on the book stands in America for $1.35, and ACA makes a special offer to members only of one copy for

5/- plus 1/- postage

When you send us your order, please give your full name and address. This is essential to identify you as a member.

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